

not be sufficient to resist the pressure of the cutting action of the various tools used in machining. The work is held by the inside in the special jaws *B* which are relieved at *E* to permit the back-facing of the rim. The tools *L* and *K*, which are held in a special tool-block on the cut-off slide, are used for back-facing and finishing the pad; and other tools (not shown) in the turret face the portion *W* of the flywheel. The boring-bar *I* has a pilot *J* which enters the guide bushing *G* in the chuck to give greater accuracy and rigidity. Two of the jaws are provided with spring-pins *C* which are released and locked by the action of the screws *F* on the shoes *D*. The stop-pin in the third jaw is fixed in order to give positive longitudinal location of the work. Work of this kind is very frequently located on the three fixed ends of the jaws and gripped by the inside as shown, but when this is done there is always a chance of incorrect holding and possible slippage due to spring of the casting. Sometimes this results in the production of grooves or a wavy surface on the outside of the work.

In the second setting of the work a fixture is used and the point of location is the recess which has been machined in the first setting. This locates the piece on a plug *M* which is shouldered at *N* and fits a hole provided for it in the center of the fixture. The previously machined surface *W* rests on three pins *P* which are of uniform height and so arranged that they leave a slight clearance between the face of the* plug *M* and the face of the shoulder on the work. The fixture body *O* is screwed to the spindle and its exterior forms a continuous ring *S* so as to make this surface clean and avoid clanger to the operator through projecting lugs, etc. The work is drawn back against the pins *P* by means of the damps *R* through the medium of the screws (*Q*). Work of this kind is frequently held and drawn down upon a continuous finished surface instead of a series of pins. The disadvantage of a continuous surface is that dirt collects upon it and renders location uncertain unless great care is taken to keep the fixture clean.

Three-point Fixture for a Pot Casting. —The fixture shown at II in Fig. 2 was arranged to hold a lit* casting *A* which is